How to Identify a Research Problem

A complete university lecture on identifying, narrowing, and formulating researchable problems

Author: Muhammad Hassan
Website: ResearchMethod.net

LECTURE SLIDES

Lecture Overview

What this lecture covers and how the ideas connect

ROADMAP

- Research problem as the starting point of academic inquiry
- Sources, types, and criteria of strong research problems
- A practical step-by-step process for identifying a problem
- Examples, classroom activity, and knowledge check questions

Learning Objectives

By the end of this lecture, students should be able to:

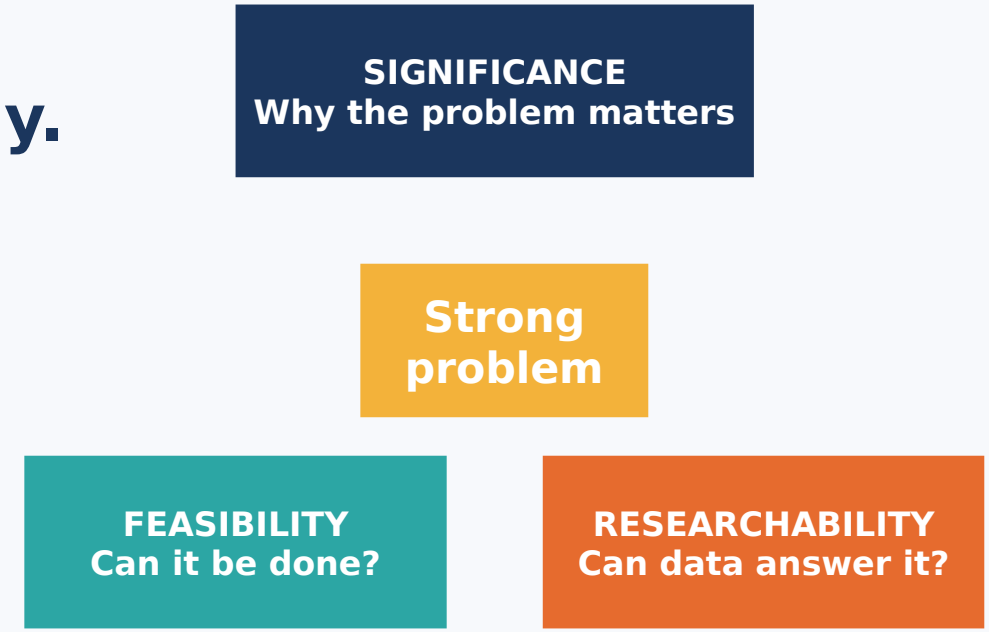
1. Define a research problem and distinguish it from a topic, question, and objective.
2. Identify potential research problems from literature, practice, theory, and data.
3. Classify problems as practical, theoretical, methodological, or context-specific.
4. Use gap analysis to narrow a broad topic into a researchable problem.
5. Evaluate a research problem for clarity, feasibility, ethics, originality, and significance.
6. Write a concise problem statement linked to research questions and methodology.

Introduction

Why identifying a research problem matters

A research problem gives purpose, direction, and boundaries to a study.

- It explains what is unclear, unresolved, inefficient, contradictory, or underexplored.
- It connects the study to existing knowledge and real-world needs.
- It guides the choice of research questions, design, participants, data, and analysis.
- Without a clear problem, a study may become too broad, descriptive, or unfocused.



A strong problem sits at the intersection of importance, possibility, and researchability.

Key Definitions

Core terms used in problem identification

Term	Student-friendly meaning
Research area	A broad field of interest, such as education, health, marketing, or technology.
Research topic	A narrower subject within the area, such as online learning engagement.
Research problem	A specific issue, gap, contradiction, or difficulty that requires systematic investigation.
Research gap	Something missing, unclear, inconsistent, under-tested, or underexplored in existing knowledge.
Problem statement	A concise explanation of the problem, its context, significance, and need for study.

Background and Academic Context

How research problems fit into academic inquiry

In academic research
• Problems emerge from reading, questioning, observing, and comparing evidence.
• Researchers build on previous studies rather than starting from personal opinion only.
• A well-defined problem helps justify the need for a new study.

In research proposals
• The problem usually appears in the introduction or background section.
• It leads logically to the purpose statement, questions, and methodology.
• Supervisors and reviewers judge whether the problem is clear and worth studying.

Context → Gap → Problem → Purpose → Questions → Design

Main Concepts: The Problem Chain

From a broad interest to a study design

Example chain
Area: Higher education → Topic: online learning engagement → Gap: little evidence about first-year students in rural universities → Problem: institutions lack evidence on why engagement declines → Question: What factors predict engagement?

Sources of Research Problems

Where good research problems come from

Literature

Unanswered questions, inconsistent findings, outdated evidence

Practice

Recurring workplace, classroom, clinical, or community difficulties

Theory

Concepts that need testing, refinement, or extension

Policy

New regulations, programs, or reforms with uncertain effects

Data

Patterns, anomalies, or trends that need explanation

Technology

New tools, platforms, risks, or opportunities

Tip: Use more than one source. Strong problems often appear where literature gaps meet real-world needs.

Types of Research Problems: Overview

Common classifications used in research planning

Type	Focus	Typical wording
Practical or applied	A real-world issue that needs improvement, explanation, or solution	“The organization lacks evidence on…”
Theoretical or conceptual	A gap, contradiction, or limitation in theory or concepts	“Existing theory does not explain…”
Methodological	Limitations in how previous studies measured, sampled, analyzed, or designed research	“Prior studies relied mainly on…”
Population or context-specific	A group, setting, country, sector, or time period that has not been sufficiently studied	“Little is known about…”

Type 1: Practical or Applied Problems

Problems rooted in real-world needs

Definition
A practical problem arises when individuals, organizations, communities, or systems face a difficulty that needs better understanding or evidence-based action.

Examples
- Low attendance in university seminars
- Declining customer satisfaction
- Poor medication adherence
- Low employee motivation after remote work policies

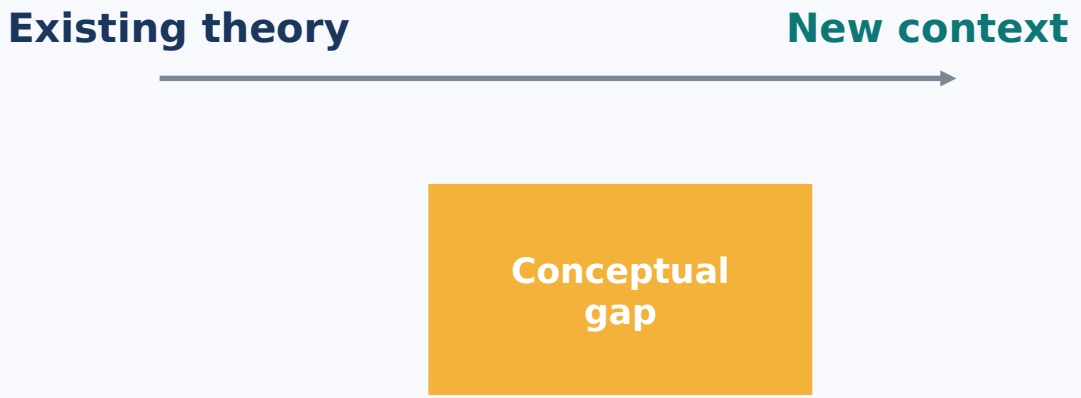
Researchable angle
Move beyond “fixing” the problem. Ask what factors, experiences, patterns, meanings, or relationships need investigation.

- Who is affected?
- Where does it occur?
- What evidence shows the issue exists?
- What decisions could the study inform?

Type 2: Theoretical or Conceptual Problems

Problems that focus on ideas, explanations, and frameworks

- A theory may not explain a new setting, group, technology, or behavior.
- Concepts may be used inconsistently across studies.
- Existing models may ignore a relevant factor or relationship.
- Findings may challenge assumptions made by earlier research.



Example
“Existing models of student motivation do not adequately explain motivation in fully asynchronous online courses.”

Type 3: Methodological and Context Problems

Problems based on how, who, where, or when prior studies were done

Methodological problems
• Previous studies used weak measures or narrow instruments.
• Samples were too small, biased, or not diverse enough.
• Research designs were mostly cross-sectional when change over time matters.
• Important variables or perspectives were not included.

Population/context problems
• A topic has been studied in one country but not another.
• A group such as first-generation students, SMEs, nurses, or rural users is underrepresented.
• New social, technological, or institutional conditions have changed the setting.
• Local evidence is needed for policy or practice decisions.

Step-by-Step Process

A practical workflow for identifying a research problem

Explore

Scan literature, practice, and evidence

Observe

Notice issues, patterns, contradictions

Map gaps

Compare what is known and unknown

Narrow

Define scope, population, and variables

Formulate

Write the problem statement

Evaluate

Check feasibility, ethics, and value

Core principle
Start broad, but do not stay broad. Each step should make the problem more specific, evidence-based, and researchable.

Step 1: Explore Literature and Evidence

Begin with what is already known

- Read recent journal articles, systematic reviews, textbooks, reports, and dissertations.
- Look for limitations, recommendations for future research, contradictory findings, and underexplored populations.
- Use keywords, citation chaining, database filters, and alerts to expand your search.
- Record notes using categories: topic, finding, limitation, gap, method, context, and possible problem.

Useful question while reading
“What does this source make clear, and what does it leave unresolved?”

Evidence to collect
- Repeated gaps across multiple studies
- Contradictions between findings
- Calls for new methods or contexts
- Practical implications not yet tested

Step 2: Observe Context and Stakeholders

Connect academic reading with real-world relevance

Observation sources
Classroom practice, workplace processes, clinical cases, community needs, digital platform data, policy changes, and user experiences.

Stakeholder questions
Who experiences the issue? What decisions depend on better evidence? What consequences occur if the problem remains unresolved?

Observe | **Document** | **Compare** | **Convert**

Convert observations into evidence-based problem ideas by comparing them with literature and available data.

Step 3: Identify and Map the Gap

Use a gap analysis matrix

What is known?	What is missing?	Why does it matter?	Possible problem
Online learning can support flexibility.	Less is known about engagement barriers for first-year rural students.	Universities need targeted support strategies.	Engagement barriers among rural first-year online learners are not well understood.
SMEs use social media marketing.	Limited evidence about how analytics tools affect decision quality.	Managers invest in tools without clear evidence.	The role of analytics in SME marketing decisions remains unclear.
Nurses experience workplace stress.	Few studies examine stress coping in night-shift nurses in local hospitals.	Stress may affect retention and care quality.	Coping strategies among night-shift nurses need investigation.

A gap is stronger when it is specific, evidence-based, and linked to significance.

Step 4: Narrow the Problem

Move from broad, vague ideas to a manageable focus

Broad topic	Focused topic	Context	Problem
Social media and students	TikTok use and study habits	First-year university students	Unclear relationship with academic self-regulation

Narrow by asking:
- Which population or setting?
- Which variables, experiences, or processes?
- Which time period or context?
- Which method can realistically answer it?

Avoid narrowing only by:
- Choosing a random small sample
- Removing important concepts without reason
- Copying another study exactly
- Making the problem too trivial or local without significance

Step 5: Formulate a Researchable Problem Statement

Turn the gap into a clear academic statement

A good problem statement usually includes:
1. Context or background
2. The specific problem or gap
3. Evidence that the problem exists
4. Why the problem matters
5. What the study will investigate

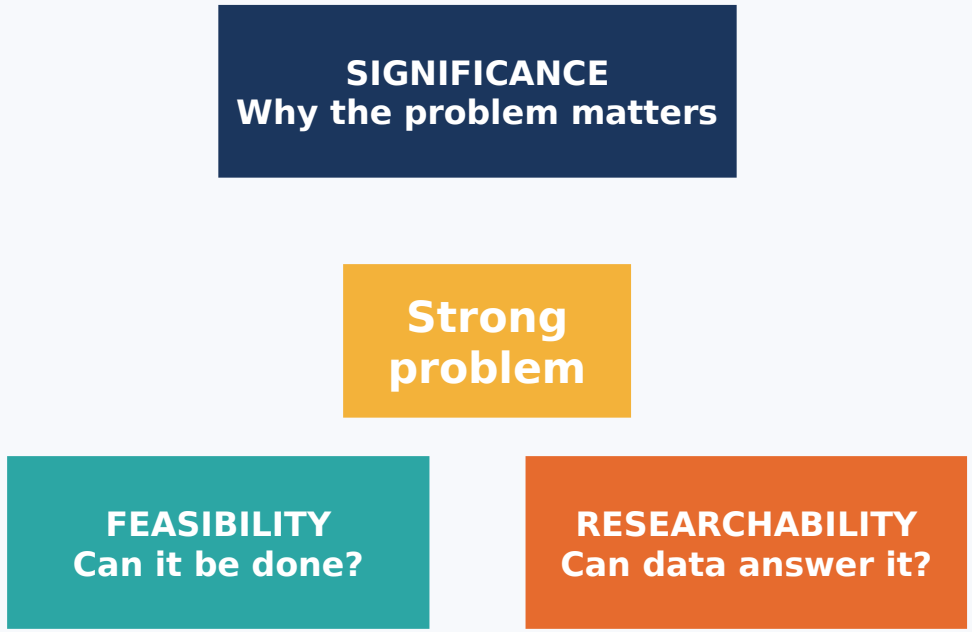
Before
“Online learning is a problem for students.”

After
“Although online learning is widely used in higher education, limited evidence explains why first-year rural university students disengage from asynchronous courses. This gap limits institutions’ ability to design targeted support.”

The improved version is specific, evidence-oriented, and points toward a study.

Step 6: Check Feasibility, Ethics, and Significance

Evaluate whether the problem can become a real study



- Feasibility: Can you access participants, data, time, skills, and resources?
- Researchability: Can the problem be investigated using academic methods?
- Significance: Will the study contribute to knowledge, practice, policy, or theory?
- Ethics: Can the study protect participants and avoid unnecessary harm?
- Originality: Does it add something beyond repeating existing work?

Research Problem Quality Checklist

Criteria for judging whether a problem is strong

Clear

Can be understood without guessing the meaning.

Focused

Specific population, context, issue, or relationship.

Researchable

Can be studied with data, evidence, and systematic methods.

Significant

Has value for knowledge, practice, theory, or policy.

Feasible

Possible within available time, skills, data, and resources.

Ethical

Can be investigated while protecting participants and integrity.

Use this checklist before writing the proposal introduction.

Writing a Strong Problem Statement

A useful structure for student research proposals

1. Begin with the broader context in one or two sentences.
2. Explain what is known from existing research or evidence.
3. Identify the gap, inconsistency, need, or difficulty.
4. State who or what is affected and why it matters.
5. End with the specific issue your study will investigate.

Template sentence

“Although [current knowledge/context], limited evidence exists about [specific gap] among/in [population/context]. This problem matters because [consequence/significance]. Therefore, this study investigates [specific focus].”

Writing rule

Do not exaggerate. Avoid phrases such as “no research exists” unless you have searched carefully and can support the claim.

Practical Examples Across Disciplines

How research problems look in different academic fields

Discipline	Research problem example
Social sciences	Community participation in local development projects remains low despite repeated awareness campaigns.
Business & management	SMEs adopt analytics tools, but managers lack evidence on how these tools influence marketing decisions.
Education	First-year students in asynchronous online courses show low engagement, but the reasons are not well understood.
Health sciences	Medication adherence among young adults with chronic conditions remains inconsistent in community clinics.
Psychology	The relationship between social media comparison and academic anxiety needs context-specific investigation.
Information technology	Users abandon mobile learning apps, but usability barriers in low-bandwidth settings are underexplored.

Research Example: Applying the Concept

Detailed scenario for a student research project

Element	Example
Research topic	Engagement in asynchronous online courses among first-year university students
Research problem	Universities observe low engagement, but limited evidence explains which barriers affect first-year rural students most.
Research question	What academic, technological, and motivational factors influence engagement in asynchronous online courses?
Population / participants	First-year undergraduate students from rural backgrounds enrolled in online courses
Data collection method	Online survey plus follow-up semi-structured interviews
Data analysis method	Descriptive statistics and regression for survey data; thematic analysis for interviews
Expected interpretation	Findings may identify priority barriers and guide student support strategies.

Comparison Table

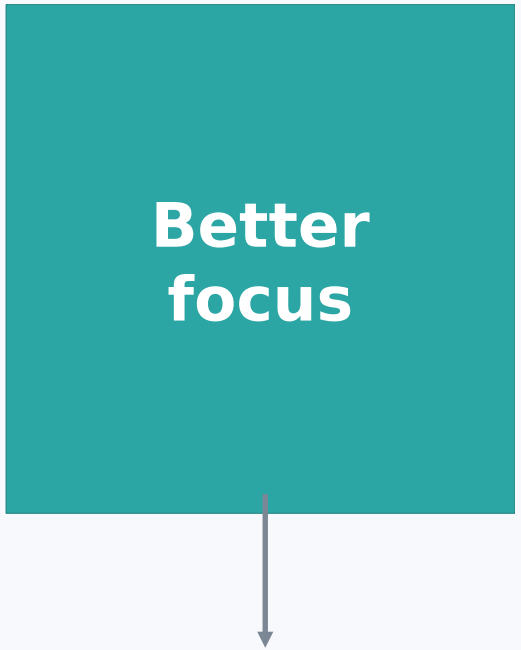
Topic vs. problem vs. question vs. objective

Concept	Purpose	Example
Topic	Identifies the general subject area.	Online learning engagement
Research problem	Explains the specific issue or gap that needs investigation.	Limited evidence explains why rural first-year students disengage.
Research question	Turns the problem into an answerable inquiry.	What factors influence engagement among rural first-year students?
Research objective	States what the study will do.	To examine academic, technological, and motivational factors affecting engagement.
Hypothesis	Predicts a relationship for testing in quantitative studies.	Limited internet access is associated with lower engagement.

Advantages of Identifying a Strong Research Problem

Benefits for students, supervisors, and readers

- Creates a clear rationale for the study.
- Helps avoid broad, unfocused, or purely descriptive projects.
- Guides the literature review by showing what evidence is relevant.
- Supports alignment between questions, design, data, and analysis.
- Makes the study easier to justify to supervisors, committees, reviewers, and readers.
- Improves the practical or theoretical contribution of the research.



Limitations and Challenges

Difficulties students may face

Common challenges
• Too many possible topics and no clear focus.
• Limited access to current literature or databases.
• Difficulty distinguishing personal interest from researchable problem.
• Overestimating what can be completed within time and resources.

How to respond
• Use a gap matrix and supervisor feedback early.
• Start with systematic, recent, and credible sources.
• Collect evidence before finalizing the problem.
• Revise the problem as feasibility and ethics become clearer.

Common Mistakes

What beginning researchers should avoid

- Choosing a topic because it is popular but not defining a specific problem.
- Claiming a gap without reviewing enough literature.
- Using vague wording such as “impact of technology” or “problems of students.”
- Selecting a problem that is too broad for the time and resources available.
- Ignoring ethical risks, participant vulnerability, or data privacy issues.
- Writing research questions that do not match the problem statement.
- Confusing advocacy, opinion, or personal belief with research evidence.

Best Practices

Practical recommendations for identifying a problem correctly

1. Begin with a broad interest, then narrow using evidence and scope decisions.
2. Read recent and foundational sources before claiming a gap.
3. Keep written notes on limitations, contradictions, and future research suggestions.
4. Discuss early problem ideas with supervisors, peers, and relevant stakeholders.
5. Check alignment among problem, purpose, questions, method, and analysis.
6. Revise the problem statement until it is specific, concise, and defensible.

Supervisor-ready test
Can you explain your research problem in 60 seconds, including the gap, context, significance, and who or what is affected?

Publication-ready test
Can a reader see how the problem leads to your literature review, questions, and design?

Ethical Considerations

Responsible problem identification and formulation

- Avoid framing communities, cultures, or vulnerable groups in stigmatizing language.
- Do not exaggerate problems to make a topic sound important.
- Respect privacy and confidentiality when using workplace, classroom, clinical, or digital data.
- Consider whether the proposed study could cause harm, pressure, embarrassment, or unfair burden.
- Acknowledge uncertainty and limitations in the evidence used to justify the problem.
- Represent prior research accurately and avoid plagiarism or selective citation.

Protect people and knowledge

Classroom Activity

From topic idea to research problem

Activity objective
Practice converting a broad topic into a focused, evidence-based research problem.

Step	Instructions	Expected outcome
1	Choose a broad topic in your field.	A short topic phrase.
2	List three possible gaps or practical issues related to the topic.	Three candidate problem ideas.
3	Select one idea and define population, context, and key concept.	A focused problem scope.
4	Write a two-sentence problem statement.	A draft research problem statement.
5	Exchange drafts with a partner and apply the quality checklist.	Peer feedback and one revision.

Discussion Questions

Use these prompts for class discussion

- Why is “choosing a topic” not the same as identifying a research problem?
- What makes a research gap convincing rather than superficial?
- How can practical experience help generate academic research problems?
- When might a very interesting problem be unsuitable for a student project?
- How can researchers avoid biased or stigmatizing problem statements?
- What should students do when literature findings are contradictory?
- How does the research problem influence data collection and analysis?

Knowledge Check

Multiple-choice and short-answer questions

- 1. Which best describes a research problem?
  A. A broad field of interest B. A specific issue or gap needing investigation C. A data collection tool D. A reference list
- 2. A research gap refers to something that is _____ in existing knowledge.
- 3. Which item is usually broader: topic or research problem?
- 4. What does feasibility mean when evaluating a problem?
- 5. Name two common sources of research problems.
- 6. Which problem type focuses on weaknesses in previous research design or measurement?
- 7. Why should researchers avoid claiming “no research exists” too quickly?
- 8. Convert this topic into a problem idea: “mobile learning apps.”

Knowledge Check Answer Key

Suggested answers

1. B. A specific issue or gap needing investigation.
2. Missing, unclear, inconsistent, underexplored, or unresolved.
3. Topic is broader; research problem is more specific.
4. The problem can realistically be studied with available access, time, skills, data, and resources.
5. Examples: literature, practice, theory, policy, data, technology, stakeholders.
6. Methodological problem.
7. Because the claim requires careful literature searching and may be inaccurate or exaggerated.
8. Example: “Students frequently abandon mobile learning apps, but usability barriers in low-bandwidth university settings are underexplored.”

Key Takeaways

The most important points to remember

- A research problem is a specific, evidence-based issue or gap that justifies a study.
- Strong problems are clear, focused, researchable, significant, feasible, ethical, and aligned with the study design.
- Problems can be practical, theoretical, methodological, population-specific, or context-specific.
- Good problem identification requires reading, observation, gap analysis, narrowing, formulation, and evaluation.
- A well-written problem statement connects context, gap, significance, and the focus of the study.

Problem First

A clear problem makes the whole research project easier to design and defend.

Conclusion

Why problem identification is central to research quality

Identifying a research problem is the act of turning curiosity into a disciplined, evidence-based inquiry.

- It requires careful reading, critical thinking, and responsible judgment.
- It helps students avoid vague topics and develop meaningful, manageable studies.
- It connects research to academic contribution and real-world relevance.
- The best research problems are specific enough to study and important enough to matter.

A strong research problem is the foundation of a strong research project.

References and Thank You

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Website: ResearchMethod.net

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